

IN THE CLAIMS

1 1. (Currently Amended) A method for implementing a multi-step pseudo random
2 sequence (PRS) generator, comprising:
3 determining relationships between outputs of flip-flops of an initial model PRS generator
4 at a current time step t with the outputs of the flip-flops at a time step $t-n$, where n is a number of
5 coefficients to be generated per time step; and
6 coupling flip-flops in the multi-step PRS generator in response to the relationships
7 between the outputs of the flip-flops at the current time step t with the outputs of the flip-flops at
8 the time step $t-n$.

1 2. (Original) The method of Claim 1, further comprising the step of selecting a number
2 of flip-flops, L , based on a length of the code sequence and a number of coefficients of the code
3 sequence to be generated per time step.

1 3. (Original) The method of Claim 1, further comprising the step of selecting a generator
2 polynomial for the initial model PRS generator.

1 4. (Original) The method of Claim 1, wherein determining the relationships between the
2 outputs of the flip-flops of the initial model PRS generator at the current time step t with the
3 outputs of the flip-flops at the time step $t-n$ comprises:
4 determining relationships between outputs of the flip-flops at a current time step t with
5 the outputs of the flip-flops at a time step $t-1$;
6 determining relationships between the outputs the flip-flops at the time step $t-1$ with the
7 outputs of the flip-flops at a time step $t-2$; and

8 determining relationships between the outputs of the flip-flops at the current time step t
9 with the outputs of the flip-flops at the time step $t-2$.

1 5. (Original) The method of Claim 4, wherein determining the relationships between the
2 outputs of the flip-flops of the initial model PRS generator at the current time step t with the
3 output of the flip-flops at the time step $t-n$ further comprises:

4 determining relationships between the outputs the flip-flops at the time step $t-2$ with the
5 outputs of the flip-flops at a time step $t-3$; and

6 determining relationships between the outputs of the flip-flops at the current time step t
7 with the outputs of the flip-flops at the time step $t-3$.

1 6. (Original) The method of Claim 5, wherein determining the relationships between the
2 outputs of the flip-flops of the initial model PRS generator at the current time step t with the
3 output of the flip-flops at the time step $t-n$ further comprises:

4 determining relationships between the outputs the flip-flops at the time step $t-3$ with the
5 outputs of the flip-flops at a time step $t-4$; and

6 determining relationships between the outputs of the flip-flops at the current time step t
7 with the outputs of the flip-flops at the time step $t-4$.

1 7. (Original) The method of Claim 6, wherein determining the relationships between the
2 outputs of the flip-flops of the initial model PRS generator at the current time step t with the
3 output of the flip-flops at the time step $t-n$ further comprises:

4 determining relationships between the outputs the flip-flops at the time step $t-4$ with the
5 outputs of the flip-flops at a time step $t-5$; and

6 determining relationships between the outputs of the flip-flops at the current time step t
7 with the outputs of the flip-flops at the time step $t-5$.

1 8. (Currently Amended) A method for implementing a multi-step pseudo random
2 sequence (PRS) generator, comprising:
3 selecting a number of flip-flops for an initial model PRS generator, L, based on a length
4 of the code sequence and a number of coefficients of the code sequence to be generated per time
5 step;
6 selecting a generator polynomial for the initial model PRS generator;
7 determining relationships between outputs of the flip-flops at a current time step t with
8 the outputs of the flip-flops at a time step t-1;
9 determining relationships between the outputs of the flip-flops at the time step t-1 with the
10 outputs of the flip-flops at a time step t-2;
11 determining relationships between the outputs of the flip-flops at the current time step t
12 with the outputs of the flip-flops at the time step t-2; and
13 coupling flip-flops in the multi-step PRS generator in response to the relationships
14 between the outputs of the flip-flops at the current time step t with the outputs of the flip-flops at
15 the time step t-2.

1 9. (Original) A multi-step pseudo random sequence (PRS) generator, comprising:
2 a first flip-flop having an output $Q_{0,u}$ and a generator polynomial G_0 ;
3 a second flip-flop having an output $Q_{1,u}$ and a generator polynomial G_1 ;
4 a third flip-flop having an output $Q_{2,u}$ and a generator polynomial G_2 ;
5 a fourth flip-flop having an output $Q_{3,u}$ and a generator polynomial G_3 ;
6 an input of the first flip-flop coupled to the PRS generator such that the output $Q_{0,u}$ is
7 generated in response to $G_0*[G_0*Q_{0,u-1} \text{ XOR } G_1*Q_{1,u-1} \text{ XOR } G_2*Q_{2,u-1} \text{ XOR } G_3*Q_{3,u-1}] \text{ XOR}$
8 $G_1*Q_{0,u-1} \text{ XOR } G_2*Q_{1,u-1} \text{ XOR } G_3*Q_{2,u-1}$;

9 an input to the second flip-flop coupled to the PRS generator such that the output $Q_{1,u}$ is
10 generated in response to $G_0*Q_{0,u-1} \text{ XOR } G_1*Q_{1,u-1} \text{ XOR } G_2*Q_{2,u-1} \text{ XOR } G_3*Q_{3,u-1}$; and
11 an input to the third flip-flop coupled to the PRS generator such that the output $Q_{2,u}$ is
12 generated in response to $Q_{0,u-1}$.

1 10. (Original) The multi-step PRS generator of Claim 9, further comprising an input to
2 the fourth flip-flop coupled to the PRS generator such that the output $Q_{3,u}$ is generated in
3 response to $Q_{1,u-1}$.

1 11. (Original) The multi-step PRS generator of Claim 9, wherein the input of the first
2 flip-flop is coupled to the PRS generator such that the output $Q_{0,u}$ is further generated in response
3 to $G_1*[G_0*Q_{0,u-1} \text{ XOR } G_1*Q_{1,u-1} \text{ XOR } G_2*Q_{2,u-1} \text{ XOR } G_3*Q_{3,u-1}] \text{ XOR } G_2*Q_{0,u-1} \text{ XOR } G_3*Q_{1,u-1}$.

1 12. (Original) The multi-step PRS generator of Claim 9, wherein the input of the second
2 flip-flop is coupled to the PRS generator such that the output $Q_{1,u}$ is further generated in response
3 to $G_1*Q_{0,u-1} \text{ XOR } G_2*Q_{1,u-1} \text{ XOR } G_3*Q_{2,u-1}$.

1 13. (Original) The multi-step PRS generator of Claim 9, wherein the input of the third
2 flip-flop is coupled to the PRS generator such that the output $Q_{2,u}$ is further generated in response
3 to $G_1*Q_{1,u-1} \text{ XOR } G_2*Q_{2,u-1} \text{ XOR } G_3*Q_{3,u-1}$.

1 14. (Original) The multi-step PRS generator of Claim 9, further comprising an input to
2 the fourth flip-flop coupled to the PRS generator such that the output $Q_{3,u}$ is generated in
3 response to $Q_{0,u-1}$.

1 15. The multi-step PRS generator of Claim 11, wherein the input of the first flip-flop is
2 coupled to the PRS generator such that the output $Q_{0,u}$ is further generated in response to $G_1 * Q_{0,u-1}$
3 $\text{XOR } G_2 * Q_{1,u-1} \text{ XOR } G_3 * Q_{2,u-1} \text{ XOR } G_2 * [G_0 * Q_{0,u-1} \text{ XOR } G_1 * Q_{1,u-1} \text{ XOR } G_2 * Q_{2,u-1} \text{ XOR } G_3 * Q_{3,u-1}]$
4 $\text{XOR } G_0 * Q_{1,u-1}$.

1 16. (Original) The multi-step PRS generator of Claim 12, wherein the input of the
2 second flip-flop is coupled to the PRS generator such that the output $Q_{1,u}$ is further generated in
3 response to $G_1 * [G_0 * Q_{0,u-1} \text{ XOR } G_1 * Q_{1,u-1} \text{ XOR } G_2 * Q_{2,u-1} \text{ XOR } G_3 * Q_{3,u-1}] \text{ XOR } G_2 * Q_{0,u-1} \text{ XOR}$
4 $G_3 * Q_{1,u-1}$.

1 17. (Original) The multi-step PRS generator of Claim 13, wherein the input of the third
2 flip-flop is coupled to the PRS generator such that the output $Q_{2,u}$ is further generated in response
3 to $G_1 * Q_{0,u-1} \text{ XOR } G_2 * Q_{1,u-1} \text{ XOR } G_2 * Q_{3,u-1}$.

1 18. (Original) The multi-step PRS generator of Claim 9, further comprising an input to
2 the fourth flip-flop coupled to the PRS generator such that the output $Q_{3,u}$ is generated in
3 response to $G_0 * Q_{0,u-1} \text{ XOR } G_1 * Q_{1,u-1} \text{ XOR } G_2 * Q_{2,u-1} \text{ XOR } G_3 * Q_{3,u-1}$.

1 19. (Original) The multi-step PRS generator of Claim 9, further comprising a fifth flip-
2 flop having an output $Q_{4,u}$ and a generator polynomial G_4 .

1 20. (Original) The multi-step PRS generator of Claim 19, further comprising an input to
2 the fifth flip-flop coupled to the PRS generator such that the output $Q_{4,u}$ is generated in response
3 to $Q_{2,u-1}$.

1 21. (Original) The multi-step PRS generator of Claim 19, further comprising an input to
2 the fifth flip-flop coupled to the PRS generator such that the output $Q_{4,u}$ is generated in response
3 to $Q_{1,u-1}$.

1 22. (Original) The multi-step PRS generator of Claim 19, further comprising an input to
2 the fifth flip-flop coupled to the PRS generator such that the output $Q_{4,u}$ is generated in response
3 to $Q_{0,u-1}$.

1 23. (Original) The multi-step PRS generator of Claim 19, further comprising an input to
2 the fifth flip-flop coupled to the PRS generator such that the output $Q_{4,u}$ is generated in response
3 to $G_0 * Q_{0,u-1} \text{ XOR } G_1 * Q_{1,u-1} \text{ XOR } G_2 * Q_{2,u-1} \text{ XOR } G_3 * Q_{3,u-1}$.